



Si321X NEON FLASHING

Introduction

The ProSLIC™ has very programmable functions. Flashing a neon bulb for message waiting is one application that the ProSLIC can be programmed to do. Neon bulbs inherently have high break over voltage (>90 V). The ProSLIC's ringing oscillator can be set to pulse >90 V across TIP and RING at a rate and rise time as to not "tinkle" a phone's ringer. Programming the ProSLIC's ringing function to achieve a neon flash signal is described below.

Programming Neon Flash Signal

The ProSLIC ringing oscillator can be programmed as a trapezoidal, low frequency source. The ringing active/inactive timers can be set such that they control the ringing source for a fraction of the ringing oscillator cycle. This control allows a controlled rise time pulse to occur that is higher in amplitude than the on-hook voltage, but retaining the same polarity at all times. The registers that are used to get this response are indirect registers 20, 21 and 22 and direct registers 34, 48, 49, 50, 51 and 74. Register 64 is used to place the ProSLIC in the ringing mode.

To achieve break over voltage for the neon bulb, 91.5 V is selected for peak ringing and a VBAT of -94.5 V is required. The VBATH register must be set to the

maximum of 3 F to generate this level ringing battery on the Si3210. If the Si3211 or Si3212 is used in this application, the same VBATH setting of 3 F is used and 94.5 V should be applied to the VBATH input of the circuit.

Using indirect registers 20, 21 and 22, the frequency, rise time and amplitude of the pulse can be set. For example: desired rise time 50 ms, hold time 75 ms, and off time 75 ms gives a period of 250 ms. The ringing oscillator should be set up for a 50 ms rise time and 4 Hz frequency. The ringing oscillator indirect registers should be calculated using the trapezoidal ringing equations.

To achieve constant polarity between TIP and RING, the ringing oscillator timers should be set to allow ringing to be active for about 25% of the ringing period. In this example, 60 ms is chosen for ringing active time. The ringing signal will not actually become inactive until the ringing signal begins its swing toward the opposite polarity and TIP/RING voltage satisfies the VOC condition (refer to ringing section of the data sheet). The inactive timer is now set to the remainder of the ringing period. In this example, 250 ms minus 60 ms active time yields 190 ms inactive time.

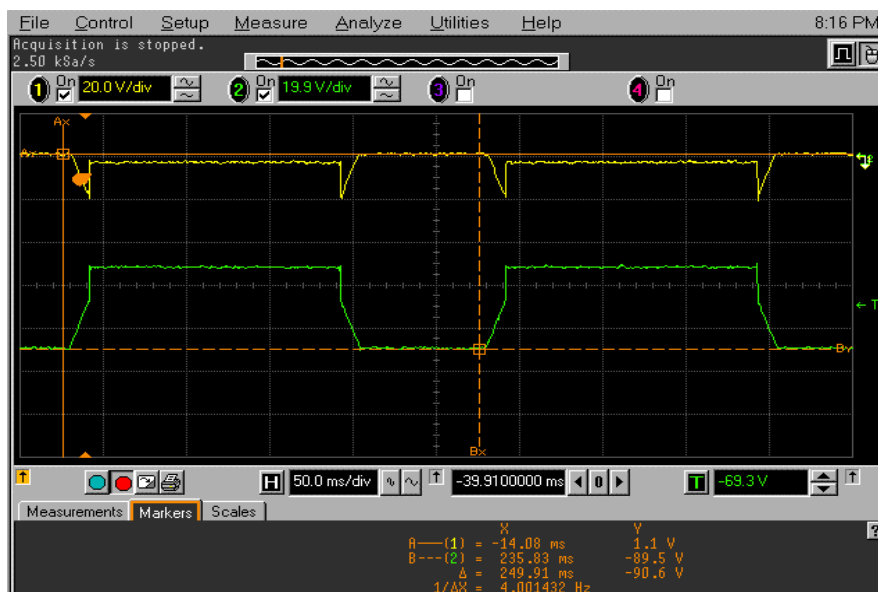


Figure 1. Neon Pulse Using the ProSLIC Ringing Oscillator (Channel 1 = TIP, Channel 2 = RING)

Table 1. Register Settings for Using Ringing Mode to Flash Neon Bulb

Indirect Register Name	Indirect Register Number	Value	Description
RNGY (4 Hz)	22 (16h)	03E8h	See trapezoidal ringing section of data sheet.
RNGX (91.5 V _{PK})	21 (15h)	7BEFh	
RCO (RNGX, t _{RISE})	20 (14h)	009Fh	
Direct Register Name	Direct Register Number	Value	Description
Ringing Osc. Control	34 (22h)	19h	Enable timers and trapezoidal
VBATH	74 (4Ah)	3Fh	VBATH = 94.5 V
Active Timer low byte	48 (30h)	E0h	Active timer = 60 ms 60 ms / 125us/LSB = 480 = 01E0h
Active Timer high byte	49 (31h)	s01h	
Inactive Timer low byte	50 (32h)	F0h	Inactive timer = 190 ms 190 ms / 125 μs/LSB = 1520 = 05F0h
Inactive Timer high byte	51 (33h)	05h	
Ringing mode	64 (40h)	04h	Place ProSLIC in ringing mode
Note: These ringing settings should be loaded for neon bulb flash only; telephone ringing settings must be loaded for normal ringing. Also, this signal will only light one element of the neon bulb. The active timer can be modified to allow one and one half cycle to light both elements of the neon bulb.			

NOTES:

Contact Information

Silicon Laboratories Inc.
4635 Boston Lane
Austin, TX 78735
Tel: 1+(512) 416-8500
Fax: 1+(512) 416-9669
Toll Free: 1+(877) 444-3032
Email: productinfo@silabs.com
Internet: www.silabs.com

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